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Bibliography #8

Substance Abuse: Implications for Prenatal Care and Child Development

May 2004

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2004

Conners NA, Bradley RH, Mansell LW, Liu JY, Roberts TJ, Burgdorf K, Herrell JM. **Children of mothers with serious substance abuse problems: An accumulation of risks.** Am J Drug Alchl Abuse 30(1):85-100, 2004.

This study examines the life circumstances and experiences of 4084 children affected by maternal addiction to alcohol or other drugs. The paper will address the characteristics of their caregivers, the multiple risk factors faced by these children, their health and development, and their school performance. Data were collected from mothers at intake into 50 publicly funded residential substance abuse treatment programs for pregnant and parenting women. Findings from this study suggest that children whose mothers abuse alcohol or other drugs confront a high level of risk and are at increased vulnerability for physical, academic, and social-emotional problems. Children affected by maternal addiction are in need of long-term supportive services.

Sword W, Niccols A, Fan A. **"New Choices" for women with addictions: Perceptions of program participants.** BMC Public Health 15;4(1):10, 2004.

Background: Substance use in pregnancy is a major public health problem. It can have profound effects on pregnancy outcomes, and childhood health and development. Additionally, women who use substances have their own health-related issues. Although intervention is important, these women often have difficulty using traditional systems of care. The New Choices program is a centralized, multi-sector approach to service delivery that has attempted to overcome barriers to care by offering one-stop shopping in a supportive environment. As part of an evaluation of this program designed for women who are pregnant and/or parenting young children, interviews were conducted with participants to gain insight into their experiences in New Choices and perceptions of any changes attributed to program involvement. Methods: A qualitative, exploratory design was used to guide data collection and analysis. Four women participated in a focus group interview and seven women agreed to individual interviews. A total of 15 individual interviews were conducted over the course of the program evaluation. A semi-structured interview guide was used to explore women's experiences in New Choices and their perceptions of the program and its impact. Results: The emergent themes captured women's motivations for attending New Choices, benefits of participation, and overall quality of the program. Children were the primary motivating factor for program enrollment. Perceived benefits included decreased substance use, improved maternal health, enhanced opportunity for employment, increased access to other resources, enhanced parenting skills, and improved child behavior and development. Women highly valued the comprehensive and centralized approach to service delivery that provided a range of informal and formal supports. Conclusions: Interview findings endorse the appropriateness and potential efficacy of a collaborative, centralized approach to service provision for women with substance use issues. Although the findings provide insight into an alternative model of service delivery for women with addictions, future research is needed to evaluate the effectiveness of the intervention. Research also is needed to determine which program components or constellation of components contribute to desired outcomes, and to learn more about processes that underlie changes in behavior.

2003

Armstrong MA, Gonzales Osejo V, Lieberman L, Carpenter DM, Pantoja PM, Escobar GJ. **Perinatal substance abuse intervention in obstetric clinics decreases adverse neonatal outcomes.** J Perinatal 23(1): 3-9, 2003.

OBJECTIVE: To evaluate the effect of Early Start, a managed care organization's obstetric clinic-based perinatal substance abuse treatment program, on neonatal outcomes. STUDY DESIGN: Study subjects were 6774 female Kaiser Permanente members who delivered babies between July 1, 1995 and June 30, 1998 and were screened by completing prenatal substance abuse screening questionnaires and urine toxicology screening tests. Four groups were compared: substance abusers screened, assessed, and treated by Early; substance abusers screened and assessed by Early Start who had no follow-up treatment; substance abusers who were only screened; and controls who screened negative. RESULTS: Infants of SAT women had assisted ventilation rates similar to control infants, but lower than the SA and S groups. Similar patterns were found for low birth weight and preterm delivery. CONCLUSION: Improved neonatal outcomes were found among babies whose mothers received substance abuse treatment integrated with prenatal care. The babies of SAT women did as well as control infants on rates of assisted ventilation, low birth weight, and preterm delivery. They had lower rates of these three neonatal outcomes than infants of either SA or S women. Journal of Perinatology (2003) 23, 3-9 doi:10.1038/sj.jp.7210847

Bolnick JM, Rayburn WF. **Substance use disorders in women: Special considerations during pregnancy.** Obstet Gynecol Clin North Am 30(3):545-58, 2003.

Care of substance-using pregnant women is complex, difficult, and often demanding. Women's care providers must be aware of these women's unique psychologic and social needs and the related legal and ethical ramifications surrounding pregnancy. In addition, relating specific substances to perinatal outcome is difficult, because concurrent use of multiple substances is frequent and many pregnant abusers are members of economically disadvantaged segments of society in which unfavorable perinatal outcomes are more common. It is also difficult to follow up outcomes in such pregnancies prospectively and to analyze research data. This article discusses various issues related to pregnancies complicated by substance use, including perinatal pharmacology and teratogenic risks, identification of substance abuse, treatment approaches, and comprehensive perinatal management.

Burd L, Martsolf J, Klug MG, O'Connor E, Peterson M. **Prenatal alcohol exposure assessment: Multiple embedded measures in a prenatal questionnaire.** Neurotoxicol Teratol 25(6):675-9, 2003.

Alcohol exposure during pregnancy is a well-recognized public health problem. Accurate assessment of prenatal alcohol exposure is especially important to identify women in need of intervention. In this study, a 36-item prenatal questionnaire was utilized to survey a representative sample of prenatal care providers to examine prevalence rates of exposure. The questionnaire included three common screening tools for alcohol use during pregnancy and the items necessary to establish a maternal risk profile. In North Dakota, 1081 pregnant women were included in the sample. Eighty were Native American and 952 were White. The TWEAK screening tool was positive for 253 of the women. Native American women had a 71% increase in

positive TWEAK screenings compared to White women. The data from prenatal care can also be used for maternal risk stratification. Early identification can provide opportunity for early interventions to decrease total exposure during pregnancy and to improve the outcome for the child.

Chiriboga CA. **Fetal alcohol and drug effects.** Neurologist 9(6):267-79, 2003.

BACKGROUND: Alcohol and drug use by pregnant women are harmful to the developing embryo and fetus. Teasing apart the specific contributions of each substance to adverse child outcome, however, proves difficult in practice. The risks to the neonate include intra-uterine growth retardation, birth defects, altered neurobehavior, and withdrawal symptoms. Subsequent behavior, development, and neurologic function may also be impaired. REVIEW SUMMARY: Maternal cigarette smoking carries the greatest risk of impaired fetal growth of any of the substances discussed herein and has been linked to subsequent externalizing behaviors. Alcohol is a well-established teratogen. Heavy exposure to alcohol in a subset of infants is associated with fetal alcohol syndrome (FAS). Mental retardation is one of the main sequelae of alcohol exposure in utero. Fetal marijuana exposure has no consistent effect on outcome. Prenatal cocaine exposure has not been shown to have any detrimental effect on cognition, except as mediated through cocaine effects on head size. Although fetal cocaine exposure has been linked to numerous abnormalities in arousal, attention, and neurologic and neurophysiological function, most such effects appear to be self-limited and restricted to early infancy and childhood. Opiate exposure elicits a well-described withdrawal syndrome affecting central nervous, autonomic, and gastrointestinal systems, which is most severe among methadone-exposed infants. CONCLUSION: Most adverse effects of prenatal drug exposure are self-limited, with catch-up growth and resolution of withdrawal and of prior neurobehavioral abnormalities noted over time. The exception is alcohol, which is linked to life-long impairments (i.e., mental retardation and microcephaly) and possibly cigarette-related behavioral effects. The absence of tangible evidence of detrimental long-term cocaine effects may reflect limitations in the methodology used to identify children at greatest risk for adverse outcome.

Funai EF, White J, Lee MJ, Allen M, Kuczynski E. **Compliance with prenatal care visits in substance abusers.** J Matern Fetal Neonatal Med 14(5):329-32, 2003.

OBJECTIVE: We sought to determine whether pregnant, inner-city substance abusers, cared for in a multidisciplinary setting, had comparable numbers of missed appointments and similar outcomes in comparison with a low-risk patient population. METHODS: A retrospective review was conducted on a sample of 97 patients with uncomplicated prenatal care over a 7-year period (1994-2001). They were compared to a sample of 88 substance abusers cared for and delivered at Bellevue Hospital over the same period. Demographic information was recorded, as well as frequency of prenatal visits, number of missed appointments, birth weight, and gestational age at delivery. RESULTS: In our population, substance abusers were found to be significantly older (28.9 vs. 25.6 years), had had more pregnancies (4.3 vs. 2.4) and had had more children (2.0 vs. 0.7) than controls. Both substance abusers and control patients had a similar number of scheduled appointments (11.4 in each group), but substance abusers missed more appointments (1.6 vs. 0.7). CONCLUSIONS: When cared for in a multidisciplinary setting, substance abusers will attend an adequate number of prenatal visits. However, they are still more likely than non-substance abusers to miss visits, although the difference may not be clinically significant.

Jos PH, Perlmutter M, Marshall MF. **Substance abuse during pregnancy: Clinical and public health approaches.** J Law Med Ethics 31(3):340-50, 2003.

Meschke LL, Holl JA, Messelt S. **Assessing the risk of fetal alcohol syndrome: Understanding substance use among pregnant women.** Neurotoxicol Teratol 25(6):667-74, 2003.

Fetal alcohol exposure is a common cause of birth defects and developmental disorders. As many as 1 in 100 children in the United States are believed to be affected by fetal alcohol exposure. Characteristics of fetal alcohol syndrome (FAS) include abnormal facial features, growth impairment, problems with learning, memory, attention span, problem solving, speech, and hearing. FAS is 100% preventable. Preliminary data from 1704 pregnant women in Minnesota were assessed: substance use during pregnancy, risk factors related to substance use during pregnancy, and how substance use among pregnant women varies across the state. Of the sample, 19.6% of the women were calculated to have drunk alcohol while pregnant. Nondrinkers were more likely to be married and unemployed than drinkers. The drinkers reported significantly higher levels of depressed mood and greater number of problems with alcohol than their abstaining counterparts. Abstainers reported a greater number of pregnancies and initiated their first prenatal visit earlier than the drinkers. Significant differences in prenatal substance use and related factors also emerged by geographic region in Minnesota. Findings are discussed in relation to prevention and policy efforts.

Tuten M, Jones HE, Svikis DS. **Comparing homeless and domiciled pregnant substance dependent women on psychosocial characteristics and treatment outcomes.** Drug Alchl Depend 69(1): 95-99, 2003.

The present study compared pregnant drug-dependent women reporting homelessness or being domiciled at treatment enrollment on initial psychosocial functioning and subsequent drug treatment outcome. Homeless pregnant women presented with greater drug use and medical problems, less social service income, and more family/social difficulties than domiciled women. Homeless women had greater rates of psychiatric problems including suicidality and higher rates of physical, emotional and sexual abuse than their domiciled counterparts. Treatment retention was poorer for homeless than domiciled pregnant women. Results suggest that treatment should address the housing needs of pregnant drug abusers as well as their related social and psychiatric problems.

2002

Green HL, Diaz-Gonzalez de Ferris ME, Vasquez E, Lau EM, Yusim J. **Caring for the child with fetal alcohol syndrome.** JAAPA 15(6): 31-34, 37-40, 2002

Huestis MA, Choo RE. **Drug abuse's smallest victims: In utero drug exposure.** Forensic Sci Int 128(1): 20-30, 2002.

The social and economic impact of drug use on our global population continues to increase leaving no geographical, social or cultural group untouched. The National Institute on Drug Abuse (NIDA), in one of the few large surveys of maternal abuse, found that 5.5% of mothers reported taking an illicit substance during gestation. These figures certainly are underestimates due to the stigma of drug use during pregnancy and the accompanying legal, ethical and economic issues. Although drugs of choice and routes of administration vary

by country, exposure of our most valuable resource, our children, to the developmental effects of drugs is an enormous problem. In utero drug exposure can have a severe impact not only on the development of the fetus, but also on the child during later stages of life. More than 75% of infants exposed to drugs have major medical problems as compared to 27% of unexposed infants. The cost of treating drug-affected infants was twice the cost of non-affected infants. Obstetrical complications including placental insufficiency, miscarriage, intrauterine death, and increased incidence of infectious and sexually-transmitted diseases are higher in the drug-abusing mother. Treatment for pregnant addicts should be a high priority for our governments. Increased awareness and improvement in our understanding of drug abuse in the medical, legal and social realms will enable us to reduce the barriers to treatment for this important population. Accurate identification of in utero drug exposure has important implications for the care of the mother and child, but can raise difficult legal issues. Society discourages prenatal care with the infliction of harsh criminal penalties. Maternal drug use during pregnancy can be monitored with urine, sweat, oral fluid and/or hair testing. Detection of in utero drug exposure has traditionally been accomplished through urine testing; however, the window of detection is short, reflecting drug use for only a few days before delivery. Monitoring exposure through testing of alternative matrices, such as neonatal meconium and hair, offers advantages including non-invasive collection and detection earlier in gestation. There are many unresolved issues in monitoring in utero drug exposure that urgently require research. These can be divided into research to definitively differentiate drug exposed and non-drug-exposed fetuses, determine the most efficient methods to routinely monitor women's drug use, and determine how these drug test results relate to neonatal and maternal outcomes. Research in this area is difficult and expensive to perform, but necessary to assess accurately drug effects on the fetus. By increasing our understanding of the physiological, biochemical and behavioral effects of gestational drug exposure, we may ultimately provide solutions for better drug prevention, treatment and a reduction in the number of drug-exposed children.

Jones HE, Svikis DS, Tran G. **Patient compliance and maternal/infant outcomes in pregnant drug-using women.** Subst Use Misuse 37(11): 1411-1422, 2002.

Treatment compliance is an important variable in drug use intervention. For pregnant drug-misusing women, compliance with treatment has been particularly problematic, even in specialized and more intensive treatment programs. The present study, conducted from March 1999 to June 2000, compared maternal/infant outcomes in pregnant drug-using women who were either compliant or noncompliant with drug use interventions offered through a prenatal care clinic. Compliant women (N = 11) completed four therapy sessions (behavioral reinforcement of drug abstinence + brief motivational therapy), while noncompliant women (N = 20) participated in zero to three therapy sessions. The two groups were similar on demographic and drug use severity measures. Compliant mothers, however, gave birth to infants with higher birthweights than noncompliant mothers. Over half of compliant mothers were also drug-free at delivery, compared to one-fourth of noncompliant mothers. These data support an association between treatment compliance and birth outcomes, and highlight the need to develop strategies for improving compliance with such interventions.

Lester BM, Tronick EZ, LaGasse L, Seifer R, Bauer CR, Shankaran S, Bada HS, Wright LL, Smeriglio VL, Lu J, Finnegan LP, Maza PL. **The maternal lifestyle study: Effects of substance exposure during pregnancy on neurodevelopmental outcome in 1-month-old infants.** Pediatrics 110(6): 1182-1192, 2002.

OBJECTIVE: This was a prospective longitudinal multisite study of the effects of prenatal cocaine and/or opiate exposure on neurodevelopmental outcome in term and preterm infants at 1 month of age. METHODS: The sample included 658 exposed and 730 comparison infants matched on race, gender, and gestational age (11.7% born <33 weeks' gestational age). Mothers were recruited at 4 urban university-based centers and were mostly black and on public assistance. Exposure was determined by meconium assay and self-report with

alcohol, marijuana, and tobacco present in both groups. At 1 month corrected age, infants were tested by masked examiners with the NICU Network Neurobehavioral Scale and acoustical cry analysis. Exposed and comparison groups were compared adjusting for covariates (alcohol, marijuana, tobacco, birth weight, social class, and site). Separate analyses were conducted for level of cocaine exposure. RESULTS: On the NICU Network Neurobehavioral Scale, cocaine exposure was related to lower arousal, poorer quality of movement and self-regulation, higher excitability, more hypertonia, and more nonoptimal reflexes with most effects maintained after adjustment for covariates. Some effects were associated with heavy cocaine exposure, and effects were also found for opiates, alcohol, marijuana, and birth weight. Acoustic cry characteristics that reflect reactivity, respiratory, and neural control of the cry sound were also compromised by prenatal drug exposure, including cocaine, opiates, alcohol, and marijuana and by birth weight. Fewer cry effects remained after adjustment for covariates. CONCLUSIONS: Cocaine effects are subtle and can be detected when studied in the context of polydrug use and level of cocaine exposure. Effects of other drugs even at low thresholds can also be observed in the context of a polydrug model. The ability to detect these drug effects requires a large sample and neurobehavioral tests that are differentially sensitive to drug effects. Long-term follow-up is necessary to determine whether these differences develop into clinically significant deficits.

Mehta SK, Super DM, Connuck D, Kirchner HL, Salvator A, Singer L, Fradley LG, Kaufman ES. **Autonomic alterations in cocaine-exposed infants.** Am Heart J 144(6): 1109-1115, 2002.

BACKGROUND: Heart rate variability (HRV) reflects autonomic control of the heart. After intrauterine cocaine exposure, asymptomatic newborn infants within 72 hours of life have decreased HRV. It is unknown whether these alterations are transient (acute effect) or persist in older infants and possibly reflect a teratogenic effect of cocaine. METHODS: This study prospectively evaluated HRV in 2- to 6-month-old infants who were exposed to cocaine in-utero. Their data were compared to normal controls and to newborns exposed to drugs other than cocaine. Based on our previous study, heavy and light cocaine exposure was also defined a priori as the amount of cocaine used during the pregnancy that was more than or less than the 70th percentile, respectively. RESULTS: At the age of 2 to 6 months, infants with in-utero cocaine exposure had higher vagal tone and higher HRV (total power) than normal controls (no exposure to drugs). Most of this increase in vagal tone occurred in the light-cocaine-exposure group. HRV and vagal tone in the heavy-cocaine-exposure group were similar to the noncocaine-exposed group. CONCLUSIONS: At 2 to 6 months of age, asymptomatic infants exposed to cocaine in-utero have recovered from lower HRV seen within 72 hours of age. Infants exposed to light cocaine recovered by a rebound by increasing their vagal tone to above-normal levels. A similar response was blunted in heavily-cocaine-exposed infants. These alterations noted at follow up suggest a possible teratogenic effect of cocaine on the developing autonomic system.

Milligan R, Wingrove BK, Richards L, Rodan M, Monroe-Lord L, Jackson V, Hatcher B, Harris C, Henderson C, Johnson AA. **Perceptions about prenatal care: Views of urban vulnerable groups.** BMC Public Health 2(1): 25, 2002.

BACKGROUND: In the United States, infant mortality rates remain more than twice as high for African Americans as compared to other racial groups. Lack of adherence to prenatal care schedules in vulnerable, hard to reach, urban, poor women is associated with high infant mortality, particularly for women who abuse substances, are homeless, or live in communities having high poverty and high infant mortality. This issue is of concern to the women, their partners, and members of their communities. Because they are not part of the system, these womens' views are often not included in other studies. METHODS: This qualitative study used focus groups with four distinct categories of people, to collect observations about prenatal care from various perspectives. The 169 subjects included homeless women; women with current or history of substance abuse; significant others of homeless women; and residents of a community with high infant mortality and poverty

indices, and low incidence of adequate prenatal care. A process of coding and recoding using Ethnograph and counting ensured reliability and validity of the process of theme identification. RESULTS: Barriers and motivators to prenatal care were identified in focus groups. Pervasive issues identified were drug lifestyle, negative attitudes of health care providers and staff, and non-inclusion of male partners in the prenatal experience. CONCLUSIONS: Designing prenatal care relevant to vulnerable women in urban communities takes creativity, thoughtfulness, and sensitivity. System changes recommended include increased attention to substance abuse treatment/prenatal care interaction, focus on provider/staff attitudes, and commitment to inclusion of male partners.

Ornoy A. **The effects of alcohol and illicit drugs on the human embryo and fetus.** Isr J Psychiatry Relat Sci 39(2): 120-132, 2002.

Women at childbearing age often use alcohol and various illicit drugs such as cocaine and heroin. These agents pass through the human placenta and may affect the developing embryo and fetus. Indeed, large amounts of alcohol ingested by the pregnant woman may produce a specific syndrome manifested by prenatal and postnatal growth retardation, a variety of facial dysmorphic features and mental retardation. Ingestion of smaller amounts of alcohol will produce the fetal alcohol effects with only few and minor dysmorphic features but with developmental delay and some degree of intellectual impairment. Cocaine use during pregnancy may apparently result in an increase in the rate of congenital anomalies, of stillbirth and of intrauterine growth retardation. The use of heroin and opiates does not seem to increase the rate of major congenital anomalies, but it reduces fetal growth and increases the rate of intrauterine fetal death. Studies on the developmental outcome of children born to cocaine or heroin dependent mothers seem all to show psychomotor developmental delay at a young age. At school age these children have intellectual impairment and a very high rate of inattention and/or hyperactivity. We should therefore address our efforts in improving the environment of these children and in treating the early symptoms of inattention and hyperactivity, even before the child reaches school.

Orrico A, Galli L, Zappella M, Monti L, Vatti GP, Venturi C, Hayek G. **Septo-optic dysplasia with digital anomalies associated with maternal multidrug abuse during pregnancy.** Eur J Neurol 9(6): 679-682, 2002.

We describe a 16-year-old female affected by septo-optic dysplasia (SOD) with digital anomalies as additional feature. This rare developmental anomaly of midline brain structures can result from different pathogenetical events, including mutations of the homeo box gene HESX1, recently suggested as the etiological cause at least in a subset of patients. The absence of mutational involvement of this gene in our patient led us to consider, in alternative terms of pathogenesis, the maternal multidrug abuse occurring during pregnancy. Our report, in accord with previous experimental evidences, points out that illicit drug use might have played a causative role in brain development anomalies, thus our patient could represent an additional case of birth defects caused by a prenatal toxic exposure. The neurologic abnormalities and the clinical history of the patient are extensively reviewed. The need to include the SOD phenotype amongst the possible teratogenic effects of multidrug abuse is evidenced.

Stein JA, Leslie MB, Nyamathi A. **Relative contributions of parent substance use and childhood maltreatment to chronic homelessness, depression, and substance abuse problems among homeless women: Mediating roles of self-esteem and abuse in adulthood.** Child Abuse Negl 26(10): 1011-1027, 2002.

OBJECTIVE: This study, using latent variable methodology, explores simultaneously the relative effects of childhood abuse and early parental substance abuse on later chronic homelessness, depression, and substance abuse problems in a sample of homeless women. We also examine whether self-esteem and recent violence

can serve as mediators between the childhood predictors and the dysfunctional outcomes.METHOD: The sample consists of 581 homeless women residing in shelters or sober living centers in Los Angeles (54% African-American, 23% Latina, 22% White, mean age=33.5 years). Multiple-indicator latent variables served as predictors and outcomes in structural models. Childhood abuse was indicated by sexual, physical, and verbal abuse.RESULTS: Childhood abuse directly predicted later physical abuse, chronic homelessness, depression, and less self-esteem. Parent substance use directly predicted later substance use problems among the women. Recent physical abuse predicted chronic homelessness, depression, and substance use problems. Greater self-esteem predicted less depression and fewer substance use problems. Childhood abuse also had significant indirect effects on depression, chronic homelessness, and drug and alcohol problems mediated through later physical abuse and self-esteem.CONCLUSIONS: Although there was a strong relationship between childhood abuse and parent drug use, childhood abuse was the more pervasive and devastating predictor of dysfunctional outcomes. Childhood abuse predicted a wider range of problems including lower self-esteem, more victimization, more depression, and chronic homelessness, and indirectly predicted drug and alcohol problems. The mediating roles of recent physical abuse and self-esteem suggest salient leverage points for change through empowerment training and self-esteem enhancement in homeless women.

Weber MK, Floyd RL, Riley EP, Snider DE Jr; National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effect. **National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effect: Defining the national agenda for fetal alcohol syndrome and other prenatal alcohol-related effects.** MNWR Recomm Rep 51(14): 9-12, 2002.

Prenatal alcohol exposure can lead to serious birth defects and developmental disabilities. A need exists to develop effective strategies for both children with fetal alcohol syndrome (FAS) or other prenatal alcohol-related effects and for women at high risk for having an alcohol-exposed pregnancy. Since the syndrome was identified approximately 30 years ago, advancements have been made in FAS diagnostics, surveillance, prevention, and intervention, but a substantial amount of work remains. Collaborations among partners in federal state, and local agencies, academia, clinical professions, school systems, and families are critical to developing and implementing successful efforts related to FAS and fetal alcohol effect (FAE). In 1999, Congress directed the Secretary of the U.S. Department of Health and Human Services to convene the National Task Force on FAS and FAE (the Task Force). CDC's National Center on Birth Defects and Developmental Disabilities, Fetal Alcohol Syndrome Prevention Team, coordinates the Task Force and manages its operation. Since the Task Force was chartered in 2000, Task Force members, with input from multiple partners, have convened to deliberate and determine the Task Force mission, goals, and priority concerns to be addressed. This report describes the structure, function, mission, and goals of the Task Force and provides their first recommendations. An explanation of how the Task Force recommendations were generated and the Task Forces next steps are also reported.

Zellman GL, Fair C, Hoube J, Wong M. **A search for guidance: Examining prenatal substance exposure protocols.** Matern Child Health J 6(3): 205-212, 2002.

OBJECTIVES: To describe key elements of a set of hospital prenatal substance exposure protocols, and to relate variations in protocol content to the state legislative environment and hospital characteristics. METHODS: Nurse managers and hospital administrators with responsibility for perinatal care were asked to provide their hospital's prenatal substance exposure protocol. Using a structured coding form, two independent coders read and abstracted information from the 87 protocols received. Hospital and patient characteristics and the state's legal environment were cross-tabulated. RESULTS: Only half of coded protocols included an implementation date; 37% lacked any goal or statement of purpose. Most covered the key components of prenatal substance exposure management, such as precipitants and guidelines for

toxicology screening, but failed to present their contents clearly. Only a few discussed whether specific maternal consent is required for a maternal or a newborn toxicology screen. Protocols from states that had made some legislative response to prenatal substance exposure were more likely to provide reporting guidelines and a discussion of consent for a toxicology screen for mothers and newborns. Protocols were more likely to be found in larger hospitals and were more detailed in hospitals serving more affluent and less minority patient populations. CONCLUSIONS: More attention needs to be devoted to the development of prenatal substance exposure protocols, as their lack of clarity precludes most from meeting protocol development goals, such as encouraging standardized care. Associations between hospital characteristics, state legislative environment and protocol features suggest that legislative mandates could shape their development and features.

2001

Behnke M, Eyler FD, Garvan CW, Wobie K. **The search for congenital malformations in newborns with fetal cocaine exposure.** Pediatrics, 107(5):E74, May 2001.

CONTEXT: The association between prenatal cocaine exposure and congenital anomalies is not definitive. OBJECTIVE: To determine whether prenatal cocaine exposure results in an increased number or identifiable pattern of abnormalities. DESIGN: A Prospective, longitudinal cohort enrolled between 1991 and 1993. SETTING: Rural public health population delivering at a regional tertiary medical center. PATIENTS: Two hundred seventy-two offspring of 154 prenatally identified crack/cocaine users and 154 nonusing controls were matched on racial parity, location of prenatal care (that related to level of pregnancy risk), and socioeconomic status. Drug use was determined through repeated in-depth histories and urine screens. Infants not examined within 7 days of birth were excluded. OUTCOMES MEASURES: Assessments were made by experienced examiners masked to maternal drug history. Included were 16 anthopometric measurements and a checklist of 180 physical features defined and agreed upon in advance. RESULTS: There were no differenced on major risk variables between the included and excluded infants. There were significantly more premature infants in the cocaine-exposed group. Cocaine-exposed infants were significantly smaller in birth weight, length, and head circumference but did not differ on remaining anthopometric measurements. There was no difference in type or number of abnormalities identified between the exposed and nonexposed group. There was no relationship between amount and timing of exposure and nay of the outcomes. CONCLUSIONS: This prospective, large-scale, blinded, systematic evaluation for congenital anomalies in prenatally cocaine-exposed children did not identify an increased number or consistent pattern of abnormalities.

Chasnoff IJ, Neuman K, Thornton D, Callaghan MA. **Screening for substance use in pregnancy: A practical approach for the primary care physician.** Am J Obstet Gynecol, 184(4):752-8, Mar 2001.

Our goal was to identify risk factors for substance use during pregnancy for primary care physicians so that we could assess a woman's risk of alcohol or drug use. Participants were 2002 Medicaid-eligible pregnant women with 2 visits to prenatal care clinics in South Carolina and Washington State. Structured interviews were used to collect data. Predictors were identified for pregnant women at high risk for substance use. Approximately 9% of the sample reported current use of either drugs or alcohol or both. Past use of alcohol or cigarettes, including during the month before pregnancy, most differentiated current drug or alcohol users from current nonusers. Our analysis suggests that primary care physicians can ask questions in the context of a prenatal health evaluation to target women for referral to a full clinical assessment for drug and alcohol use.

Clark KA, Dee DL, Bale PL, Martin SL. **Treatment compliance among prenatal care patients with substance abuse problems.** Am J Drug Alcohol Abuse, 27(1):121-36, Feb 2001.

There are an insufficient number of substance abuse treatment programs available to pregnant women; however, even when women do enroll in treatment, they often choose not to comply with particular components of their treatment. To better understand what factors are associated with a woman's likelihood of compliance with treatment, this study assesses 244 pregnancy, substance-using women enrolled in a specialized substance abuse treatment program. Women complied with treatment referrals are compared with those who did not comply on various factors including their sociodemographic characteristics, types of substance use before and during pregnancy, experiences of violence before and during pregnancy, and prior substance use treatment. Analysis found that outpatient treatment compliance was lore likely among women who smoked cigarette before pregnancy, women who had received previous substance abuse treatment, and women whose partner had received previous substance abuse treatment. Outpatient treatment compliance did not vary by sociodemographic characteristics, any other type of substance use, or the women's experienced of violence. Inpatient treatment compliance was more likely among women who received prior substance abuse treatment; however, no other characteristic was found to be associated with inpatient treatment compliance. Past experiences with substance abuse treatment by the woman or her partner were significantly associated with treatment referral compliance. These findings suggest that the previous treatment experiences of women and their partners are important factors in shaping a successful substance abuse treatment program for pregnancy women.

Frank DA, Augustyn M, Knight WG, Pell T, Zuckerman B. **Growth, development, and behavior in early childhood following prenatal cocaine exposure: A systematic review.** JAMA, 285(12):1613-25, Mar 2001.

CONTEXT: Despite recent studies that failed to show catastrophic effects of prenatal cocaine exposure, popular attitudes and public policies still reflect the belief that cocaine is a uniquely dangerous teratogen. OBJECTIVE: To critically review outcomes in early childhood after prenatal cocaine exposure in 5 domains: physical growth; cognition; language skills; motor skills; and behavior, attention, affect, and neurophysiology. DATA SOURCES: Search of MEDLINE and Psychological Abstracts from 1984 to October 2000. STUDY SELECTION: Studies selected for detailed review (1) were published in a peer-reviewed English-language journal; (2) included a comparison group; (3) recruited samples prospectively in the perinatal period; (4) used masked assessment; and (5) did not include a substantial proportion of subjects exposed in utero to opiates, amphetamines, phencyclidine, or maternal human immunodeficiency virus infection. DATA EXTRACTION: Thirty-six of 74 articles met criteria and were reviewed by 3 authors. Disagreements were resolved by consensus. DATA SYNTHESIS: After controlling for confounders, there was no consistent negative association between prenatal cocaine exposure and physical growth, developmental test scores, or receptive or expressive language. Less optimal motor scores have been found up to age 7 months but not thereafter, and may reflect heavy tobacco exposure. No independent cocaine effects have been shown on standardized parent and teacher reports of child behavior scored by accepted criteria. Experimental paradigms and novel statistical manipulations of standard instruments suggest an association between prenatal cocaine exposure and decreased attentiveness and emotional expressivity, as well as differences on neurophysiologic and attentional/affective findings. CONCLUSIONS: Among children aged 6 years or younger, there is no convincing evidence that prenatal cocaine exposure is associated with developmental toxic effects that are different in severity, scope, or kind from the sequelae of multiple other risk factors. Many findings once thought to be specific effects of in utero cocaine exposure are correlated with other factors, including prenatal exposure to tobacco, marijuana, or alcohol, and the quality of the child's environment. Further replication is required of preliminary neurologic findings.

Johnson MO. **Mother-Infant interaction and maternal substance use/abuse: An Integrative Review of Research Literature in the 1990s.** Online J Knowl Synth Nurs 8:2, 2001.

PURPOSE: Mother-infant interaction is crucial for optimal infant development and parenting. In the environment of prenatal substance use/abuse there is potential for both mother and child to present negative interactive behaviors. Recent increased incidence of substance use/abuse by pregnant women in the United States has provoked concern for the infant's outcome in these circumstances. Recent literature does not indicate a uniformly dismal outlook for infants born exposed to drugs. In this paper, published research from the 1990s that specifically addressed the relationship between prenatal substance use/abuse and the mother-infant interaction was examined utilizing the Barnard model of parent-infant interaction as a guide. Twenty-three articles matched search criteria and were included in the review. CONCLUSIONS: The majority of studies (14/23) showed that maternal substance abuse was associated with a recognizably detrimental impact on mother-child interaction. Six studies did not confirm an adverse effect. Negative impact on the interaction was related to the degree of maternal substance abuse in three studies and to its continuation postnatally in two. Postnatal environment correlated strongly with the quality of mother-child interaction in the substance-exposed dyads. IMPLICATIONS: Clinical and research implications are described.

Kelly R, Zatzick D, Anders T. **The detection and treatment of psychiatric disorders and substance use among pregnant women cared for in obstetrics.** Am J Psychiatry, 158(2):213-9, Feb 2001.

OBJECTIVE: This investigation assessed the detection and treatment of psychiatric disorders and at-risk substance use among pregnant women in the obstetric sector. METHOD: The Primary Care Evaluation of Mental Disorder Patient Health Questionnaire and modified CAGE questionnaires were used to assess current psychiatric disorders and at-risk substance use among 186 women receiving prenatal care. Medical records were reviewed for evidence of obstetric providers' recognition of psychiatric and substance use symptoms and diagnosis and initiation of evaluations and treatments. The associations between patient characteristics and chart-documented evaluations and treatments were ascertained. RESULTS: Seventy (38%) of the women met screening criteria for psychiatric disorders or substance use. Among women who screened positive for symptoms were recorded in 43% of the charts, diagnoses in 18%, evaluations in 35%, and treatments in only 23%. Patients who screened positive for psychiatric disorders and/or substance used were significantly more likely to have a documented mental health evaluation if they were less well educated, had inadequate prenatal care, or had longer hospital stays at delivery. CONCLUSIONS: A substantial number of women treated in obstetrics have unrecognized and untreated psychiatric disorders and substance use. Given the potential impact of antenatal mental disturbances on maternal and infant outcomes, further investigations into the psychiatric evaluation and treatment pregnant women in the obstetrical sector are required.

Singer LT, Hawkins S, Huang J, Davillier M, Baley J. **Developmental outcomes and environmental correlates of very low birthweight, cocaine-exposed infants.** Early Hum Dev, 64(2):91-103, Sep 2001.

Fetal cocaine exposure may have differentially adverse effects on developmental outcomes of very low birthweight (VLBW) infants. As part of a longitudinal study of 31 cocaine-positive very low birthweight infants, and age, race and socioeconomic status matched VLBW controls reenrolled at birth were followed. Neonatal maternal-child interactions, concurrent maternal psychological characteristics and environmental factors conceptualized as important for child outcome were assessed as well as standard developmental outcomes at 3 years. In the neonatal period, cocaine-exposed VLBW infants who remained in maternal custody tended to be rated as less responsive and their mothers as less nurturing, less emotionally available and with a tendency to use more maladaptive coping mechanisms than nonexposed VLBW infants. At follow-up, cocaine-exposed VLBW children were delayed in cognitive, motor and language development compared

to controls. Almost half (45%) of the exposed children scored in the range of mental retardation compared to 16% of the comparison VLBW children. The persistent cognitive, motor and language delays of the cocaine-exposed VLBW children, combined with the poorer behavioral interactions of cocaine-using women with their infants in the neonatal period, indicate a need for increased developmental surveillance of cocaine-exposed VLBW infants with a focus on maternal drug treatment and parenting interventions.

Whaley SE, O"Connor MJ, Gunderson B. **Comparison of the adaptive functioning of children prenatally exposed to alcohol to a nonexposed clinical sample.** Alcohol Clin Exp Res, 25(7):1018-24, July 2001.

Several studies show impairments in the social and adaptive behaviors of children prenatally exposed to alcohol. However, there remains limited consensus on whether the alcohol exposure directly affects social functioning or whether its effect is mediated by deficits in IQ. In addition, no studies have investigated whether deficits in social functioning are significantly more pronounced in children prenatally exposed to alcohol than in children referred to psychiatric treatment who were not prenatally exposed. We explored the effect of alcohol exposure on social and adaptive functioning and explored whether or not social and adaptive functioning are significantly more impaired in children prenatally exposed to alcohol than in a clinical sample of children. A sample of 33 alcohol-exposed children was compared with a sample of 33 clinic-referred nonexposed children. The groups were compared on measures of communication, daily living skills, and socialization. The groups were matched on sex, age, IQ, and outpatient or inpatient status. Analyses revealed that the prenatally alcohol-exposed children did not differ significantly from the nonexposed children in any of the domains of adaptive functioning. However, with age, exposed children showed a more rapid decline in socialization standard scores compared with the nonexposed clinical sample. Young children who were exposed to alcohol prenatally show deficits in all domains of adaptive functioning. Although these deficits do not seem to differ from those exhibited by young children with psychiatric problems but no prenatal exposure, deficits in socialization behavior of prenatally exposed children may become more significant with age.

2000

Morse BA, Hutchins E. **Reducing complications from alcohol use during pregnancy through screening.** J Am Med Womens Assoc, 55(4):225-7, 240, Summer 2000.

Prenatal providers are reluctant to discuss alcohol use in the clinical setting, even though heavy alcohol use is associated with fetal alcohol syndrome (FAS) and fetal alcohol effects (FAE), sometimes known as alcohol-related neurodevelopmental disorder. Fourteen percent to 20% of pregnant women report drinking some alcohol during pregnancy. Approximately 0.2% to 1% meet the criteria for heavy drinking. Reducing drinking during pregnancy has the potential to reduce the risk for FAS and FAE. Routine screening for alcohol use during pregnancy followed by referrals for those considered to be at risk is recommended. Women are often more receptive to intervention during pregnancy, as they focus on positive health behaviors. A number of brief screening tools designed for use on a routine basis are reviewed. Physicians who learn to comfortably discuss alcohol use during pregnancy can help substantially reduce the impact of these disorders.

Scott-Lennox J, Rose R, Bohlig A, Lennox R. **The impact of women's family status on completion of substance abuse treatment.** J Behav Health Serv Res 27(4): 366-379, 2000.

This study examines the role of family status and demographic characteristics in explaining the nearly 60% dropout rate for women in substance abuse treatment. Data from the administrative record files of the Illinois

Office of Alcoholism and Substance Abuse (OASA) for the fiscal year 1996-97 were analyzed for women age 12 or older who completed intake for publicly funded substance abuse treatment and whose outpatient treatment records were closed at year-end. Multivariate logistic regression models found that the likelihood of not completing treatment was greatest for women who were African American, pregnant, had custody of minor children, or were younger than age 21. However, African American women who had children in foster care were more likely to complete treatment. Implications for treatment and research are discussed.

Stein JA, Lu MC, Gelberg L. **Severity of homelessness and adverse birth outcomes.** Health Psychol, 19(6):524-34, Nov 2000.

Predictors and the prevalence of adverse birth outcomes among 237 homeless women interviewed at 78 shelters and meal programs in Los Angeles in 1997 were assessed. It was hypothesized that they would report worse outcomes than national norms, that African Americans would report the worst outcomes because of their greater risk in the general population, and that homelessness severity would independently predict poorer outcomes beyond its association with other adverse conditions. Other predictors included reproductive history, behavioral and health-related variables, psychological trauma and distress, ethnicity, and income. African Americans and Hispanics reported worse outcomes than are found nationally, and African Americans reported the worst outcomes. In a predictive structural equation model, severity of homelessness significantly predicted low birth weight and preterm births beyond its relationship with prenatal care and other risk factors.

Sweeney PJ, Schwartz RM, Mattis NG, Vohr B. **The effect of integrating substance abuse treatment with prenatal care on birth outcome.** J Perinatol, 20(4):219-24, June 2000.

This study determines whether engaging pregnant substance abusers in an integrated program of prenatal care and substance abuse treatment would improve neonatal outcomes. The subjects were women who voluntarily enrolled in Project Link, an intensive outpatient substance abuse treatment program at Women and Infants Hospital, Providence, RI. A total of 87 women received substance abuse treatment in conjunction with their prenatal care; the comparison group of 87 women received equivalent prenatal care but did not enroll in the substance abuse treatment program until after they delivered. The two groups of women were similar demographically and socioeconomically and had similar substance abuse histories. The key outcomes were gestational age at delivery, birth weight, preterm delivery, Apgar scores, and neonatal intensive care admission rate. Factors controlled in the multivariate models included demographics, socioeconomic status, parity, and prenatal care. Infants born to women who enrolled prenatally were 400 gm heavier, and their gestational age was 2 weeks longer than infants of mothers enrolled postpartum. In addition, they were approximately one-third as likely to be born with a low birth weight and approximately one-half as likely to be admitted to the neonatal intensive care unit. Neonatal outcome is significantly improved for infants born to substance abusers who receive substance abuse treatment concurrent with prenatal care compared with infants born to substance abusers who enter treatment postpartum.

1999

Bauer CR. **Perinatal effects of prenatal drug exposure. Neonatal aspects**. Clin Perin, 26(1):87-106, 1999.

When substance-exposure issues are intermingled with other high-risk-factors like low socioeconomic status, poor nutrition, lack of appropriate stimulation, neglect, abuse, and violence, it becomes impossible to isolate the various contributions to an infant or child's failure to thrive. Many of these issues are societal and beyond the individual's direct control. Drug exposure is not. Both maternal abuse and environmental contamination

can be addressed by the individual. Deliberate exposure of an infant or child to drugs is a form of child abuse that is preventable. Information and education are, it is hoped, the keys to effective intervention.

Boukydis CF, Lester BM. **The NICU Network Neurobehavioral Scale. Clinical use with drug exposed infants and their mothers.** Clin Perinatol, 26(1):213-30, March 1999.

The NNNS provides a comprehensive assessment of the at-risk and drug-exposed infant. The examination was developed for research and has now been extended to clinical practice. It is routinely used in our hospital in several clinical programs. In this article we detailed how the examination is used with substance-involved mothers and their infants. As we continue to develop assessment procedures based on understanding the capacities of the infant and understanding the parenting capacities of mothers, we will improve our ability to secure the welfare of drug-exposed infants.

Eyler FD, Behnke M. **Early development of infants exposed to drugs prenatally**. Clin Perinatol, 26(1):107-50, vii, March 1999.

This article includes a summary and critique of methodological limitations of the peer-reviewed studies of developmental outcome during the first 2 years in children prenatally exposed to the most commonly used drugs of abuse: tobacco, alcohol, marijuana, heroin/methadone, and cocaine. Reported effects vary by specific drug or drug combinations and amount and timing of exposure; however, few thresholds have been established. Drug effects also appear to be exacerbated in children with multiple risks, including poverty, and nonoptimal caregiving environments. Although prenatal exposure to any one drug cannot reliably predict the outcome of an individual child, it may be a marker for an array of variables that can impact development. Appropriate intervention strategies require future research that determines which factors place exposed children at risk and which are protective for optimal development.

Hans SL. **Demographic and psychosocial characteristics of substance-abusing pregnant women.** Clin Perinatol, 26(1):55-74, March 1999.

Women who abuse drugs and alcohol during pregnancy are an elusive population who often remain unidentified to practitioners and researchers and hence have not been well studied. In trying to understand better the characteristics of women who use drugs during pregnancy, the present article relies extensively on information gathered in studies of women in substance abuse treatment who, as epidemiologic studies show, may be more severely impaired than other substance-abusing women and, therefore, may not be typical of substance-abusing women identified in the course of obstetric practice. The most objective picture available of the universe of women who use drugs during pregnancy comes from blinded urine toxicology screens conducted at samples of representative hospitals across states and across the country. The startling finding to emerge from these studies is that common perceptions of substance abuse as a problem of poor, ethnic minority, and young individuals is inaccurate and that this perception may all too often be acted on by medical providers in a prejudicial manner. These studies show similar rates of substance use during pregnancy by women of different racial, social class, and age categories. Demographic features are only related to type of substance used, with black women and poorer women more likely to use illicit substances, particularly cocaine, and white women and better educated women more likely to use alcohol, the substance whose teratogenic effects have been most clearly documented. Despite the even distribution of substance use across demographic categories, poor women and women of color are far more likely to be reported to health and child welfare authorities for use of substances during pregnancy than are other women, even when their base

rates for use of illicit drugs are considered. Data from both epidemiologic studies and samples of women seeking treatment for substance abuse problems indicate that the lives of substance-abusing women are fraught with difficulties past and present. Substance-abusing women are likely to have been raised by parents who were substance abusers, particularly alcoholics. Although the intergenerational patterns of substance abuse may have some genetic basis, there is also ample evidence suggesting problematic relationships in families with a substance-abusing parent that raises concerns about intergenerational transmission of problematic parenting behavior. Perhaps the most startling research finding reported in studies reviewed in this article is the high proportion of substance-abusing women who have experienced early sexual abuse. Although most studies have not had adequate comparison groups of non-substance-abusing women, the fact remains that most studies suggest a third to a half of substance abusing women experienced some kind of sexual abuse during childhood. Substance-abusing women's lives remain complicated as adults. They are commonly involved with men who are also users of drugs, they are often the victims of domestic violence, and they suffer from a variety of psychiatric disorders. Studies of epidemiologic and treatment populations indicate that the majority of substance-abusing women have one or more types of comorbid mental disorders, with depression being the most common and the most elevated compared with substance-abusing men, but antisocial personality being extremely high compared with samples of non-substance-abusing women.

Kelly RH, Danielsen BH, Golding JM, Anders TF, Gilbert WM, Zatzick DF. **Adequacy of prenatal care among women with psychiatric diagnoses giving birth in California in 1994 and 1995.** Psychiatr Serv, 50(12):1584-90, Dec 1999.

OBJECTIVE: Although poor prenatal care is detrimental to maternal and infant health, few studies have assessed the adequacy of prenatal care among women with psychiatric diagnoses. This investigation examined the association between chart-recorded psychiatric and substance use diagnoses at the time of delivery and adequacy of prenatal care among all women delivering babies in California hospitals during 1994 and 1995. METHODS: The authors undertook an archival analysis of data from the California Health Information for Policy Project (CHIPP), which consists of linked hospital discharge and birth certificate data for 1,094,178 deliveries in 1994 and 1995. The associations between International Classification of Diseases, 9th Revision, Clinical Modification psychiatric and substance abuse diagnoses and level of prenatal care were examined. Logistic regression analyses were conducted to assess the association between maternal diagnostic category and inadequate prenatal care while controlling for payment source, age, education, race, marital status, and parity (previous births). RESULTS: Women who received psychiatric and substance use diagnoses demonstrated significantly increased risk of inadequate prenatal care compared with women without those diagnoses. CONCLUSIONS: Psychiatric diagnoses were associated with an increased risk of inadequate prenatal care; the association between psychiatric and substance use diagnoses and poor prenatal care persisted even after the analysis controlled for known risk factors. Future investigations will need to elucidate the processes of prenatal care for women with psychiatric disorders so that preventive interventions can be developed.

Malanga CJ 3rd, Kosofsky BE. **Mechanisms of action of drugs of abuse on the developing fetal brain**. Clin Perinatol, 26(1):17-37, v-vi, March 1999.

The consequences of public health of the acquisition and use of drugs of abuse have been well demonstrated. Despite intense effort, however, progress has been slow in recent years in ascertaining the specific neurodevelopmental effects of these drugs on the children of drug-abusing mothers. The use of animal models allows the investigator to determine the specific biological contributions of prenatal exposure to drugs of abuse on neurodevelopmental outcome while controlling for covariates that have confounded clinical studies, such as altered nutrition in pregnancy, suboptimal rearing environment of the young, and availability of drug

and nondrug stimulation to the offspring. This article reviews the preclinical literature on the gestational effects of drugs of abuse with particular emphasis on cocaine, ethanol, and the opiate narcotics. Mechanisms of drug action on the mature and developing brain are summarized. A model of developmental impact on the brain regions underlying drug-induced reward and reinforcement and its potential postnatal importance is presented.

Smeriglio VL, Wilcox HC. **Prenatal drug exposure and child outcome. Past, present, future**. Clin Perinatol, 26(1):1-16, March 1999.

Scientific study of prenatal drug exposure and child outcome began a period of substantial growth in the 1970s with a focus on exposure to opiates. By the mid-1980s, attention shifted to cocaine. Most of this research has involved cohort studies in which groups of children are followed up longitudinally from birth. Significant progress has been made regarding the assessment of child outcome and regarding attention to and analysis of confounding factors that travel with prenatal exposure. As progress has been made, investigators are tackling new and continuing challenges inherent in these complex studies. Considerable effort is being devoted to determining the level of severity of exposure. Interest is increasing regarding the use of neuroimaging assessments as well as the identification of possible biologic and environmental mechanisms underlying associations between prenatal exposure and subtle child outcomes.

Tronick EZ, Beeghly M. **Prenatal cocaine exposure, child development, and the compromising effects of cumulative risk.** Clin Perinatol, 26(1):151-71, March 1999.

On the whole, the literature suggests that toddlers and young children who are exposed prenatally to cocaine exhibit few, if any, consistent differences in developmental functioning compared with demographically similar, nonexposed, age-matched controls. The paucity of cocaine-related findings does not mean that prenatally cocaine-exposed children are free from developmental problems. Cocaine-exposed infants may well have specific deficits that are masked by confounding factors in study designs; however, more important is the worrisome finding that the average performance of both drug-exposed and nonexposed children in the literature tends to be poorer than expectations for age. This problem likely stems from the fact that most study children in the literature (regardless of exposure status) come from low-income backgrounds and consequently have been exposed to multiple medical and social risk factors associated with long-term poverty. The fact that exposure to multiple risk factors has powerful, compromising effects on children's outcomes may overshadow any specific effects of prenatal cocaine exposure. The problem of high cumulative risk in the literature raises both methodologic and clinical issues. To disentangle the relationship among prenatal cocaine exposure and other comorbid risk factors in predicting children's outcomes, investigators in future studies should recruit samples with varying levels of accumulated risk. This increased range of risk will also permit researchers to evaluate the interaction of exposure status and risk status and identify specific protective factors that may contribute to resilient outcomes for these infants. This information will be helpful in the design and timing of intervention services for these high-risk infants and their families. On a clinical level, when exposed children present for interventional services, professionals must not limit their remedial efforts to drug treatment alone. Rather, clinicians should also view prenatal drug exposure as a possible marker for the presence of multiple medical and social risk factors (e.g., maternal psychopathology, social isolation, child maltreatment, domestic violence, or inadequate caregiving). Because any of these factors may place children in developmental jeopardy, these comorbid risk factors must be considered, together with prenatal drug exposure, and, when possible, treated. Although confronting this wide range of problems may seem overwhelming, many conditions associated with poverty are treatable. Moreover, from the perspective of the cumulative risk model, interventions are most likely to succeed if they attempt to reduce the overall burden of risk rather than targeting single risks.

1998

Black MM, Krishnakumar A. **Children in low-income, urban settings: Interventions to promote mental health and well-being.** Amer Psych, 53(6):635-46, 1998.

This article is a review of literature on mental health interventions for children in low-income, urban settings. While the urban environment provides unique political, cultural, economic, and educational opportunities for children and families, it may also have a negative impact on the mental health and well-being of children and adolescents. This is particularly true when they are exposed to settings with high rates of crime, violence, delinquency, substance use, abuse, and poverty. Psychologists are well suited to intervene in problems in these areas, but most psychological services have been directed to children who are experiencing problems. There has been less focus on population-based or preemptive interventions. This review presents 11 recommendations for urban interventions that build on individual, family, and community strengths to promote the mental health and well-being of urban children and adolescents.

Chang G, Wilkins-Haug L, Berman S, Goetz MA, Behr H, Hiley A. **Alcohol use and pregnancy: Improving identification**. Obstet Gynecol, 91(6):892-8, June 1998.

OBJECTIVE: To test the effectiveness of a four-item prenatal-alcohol-use, self-administered screening questionnaire that asks about tolerance to alcohol, being annoyed by other's comments about drinking, attempts to cut down, and having a drink first thing in the morning ("eye-opener") (T-ACE) in an ethnically and socioeconomically diverse sample. METHODS: Two hundred fifty T-ACE-positive and 100 T-ACE-negative women completed a comprehensive assessment of their alcohol use after initiating prenatal care at the Brigham and Women's Hospital in Boston, Massachusetts. This comprehensive assessment, which included the Alcohol Use Disorders Identification Test and the Short Michigan Alcoholism Screening Test as comparisons to the T-ACE, generated three criterion standards: diagnostic and Statistical Manual of Mental Disorders, Third Ed., Revised (DSM-III-R), lifetime alcohol diagnoses, risk drinking (regularly having more than one fluid ounce of alcohol per drinking day before pregnancy), and current drinking. RESULTS: T-ACE-positive pregnant women were more likely than T-ACE-negative women to satisfy DSM-III-R criteria for lifetime alcohol diagnoses and risk drinking and to have current alcohol consumption. In contrast, obstetric staff members documented only 33 women as using alcohol at any time, even though nearly all subjects were asked about drinking upon initiation of prenatal care. CONCLUSION: The T-ACE was the most sensitive screen for lifetime alcohol diagnoses, risk drinking, and current alcohol consumption. It outperformed obstetric staff assessment of any alcohol use by pregnant women enrolled in the study.

Elk R, Mangus L, Rhoades H, Andres R, Grabowski J. **Cessation of cocaine use during pregnancy: Effects of contingency management interventions on maintaining abstinence and complying with prenatal care.** Addict Behav, 23(1):57-64, Jan 1998.

Previous studies have reported cessation of cocaine use in pregnant women prior to treatment entry. This study examined the relative effectiveness of adjunctive contingency management interventions in maintaining abstinence and enhancing compliance with prenatal care in this unique population. Pregnant cocaine-dependent women who had used the drug during this pregnancy but had ceased use prior to study entry were randomly assigned to one of two treatment groups. All patients received a multifaceted treatment

including behaviorally based drug counseling and weekly prenatal visits. Patients in the experimental condition also received contingent reinforcement for cocaine abstinence and attendance at prenatal visits. There was a high rate of retention and abstinence from cocaine in both groups. However, patients in the experimental group had a higher rate of attendance at prenatal visits, and none of the patients in this group experienced adverse perinatal outcome(s), compared to 80% of patients in the control group. This finding has important implications for cost-effective treatments and prevention of illness.

Jones HE, Balster RL. **Inhalant abuse in pregnancy**. Obstet Gynecol Clin North Am, 25(1):153-67, 1998.

Information from a variety of sources suggests the possibility of adverse effects of maternal inhalant abuse, although a well-controlled, prospective study in this area has not been conducted. One source of this concern is the data from occupational exposure to some of the abused solvents, specifically toluene and TCE, with numerous reports suggesting increased spontaneous abortion and fetal malformations. There are also data suggesting decreased fertility and an increased risk for spontaneous abortion in health care workers exposed to nitrous oxide. The relevance of these studies to problems of inhalant abuse is not clear. Although the chemicals involved are the same, there are many differences in the exposure parameters, the populations exposed, and the types of associated risk factors. Nonetheless, there are more than 100 cases reported in the literature of children born to solvent-abusing mothers. Many of these children were small at birth, and some have craniofacial abnormalities not unlike that seen in children with FAS. In the few studies reporting the findings of follow-up in these children, some evidence has been obtained for retardation in growth and development and for residual deficits in cognitive, speech, and motor skills. Clearly, more research is needed to rule out the concomitant risk factors and to identify specific chemicals and patterns of use associated with adverse effects. Animal studies provide more direct evidence that prenatal exposure to toluene or TCE can produce reduced birth weights, occasional skeletal abnormalities, and delayed neurobehavioral development, even under conditions designed to mimic inhalant abuse patterns. Additional research is needed to identify other chemicals with adverse effects, critical periods of exposure, effects of combinations of inhalants, or interactions with drugs of abuse. The research literature seems sufficient to alert clinicians to possible problems in patients who abuse inhalants while pregnant. Diagnosis and good prenatal care for these women are important. The evidence for neonatal withdrawal is limited at this time; however, infants born to women who have recently used inhalants should be observed carefully for an alcohol-like withdrawal syndrome. Although it is not possible to link a specific birth defect or developmental problem in the child of an inhalant abuser to prenatal exposure to a specific chemical, it is clear that inhalant abuse and its associated lifestyle place children at increased risk. A wider appreciation of this is needed among health care professionals and the general public.

Kaltenbach K, Finnegan L. **Prevention and treatment issues for pregnant cocaine-dependent women and their infants**. Ann N Y Acad Sci, 846:329-34, June 21, 1998.

The increase in cocaine use among pregnant women has created significant challenges for treatment providers. Drug dependent women tend to neglect general health and prenatal care. Perinatal management is often difficult due to medical, obstetrical, and psychiatric complications. Research has demonstrated that comprehensive care, including high risk obstetrical care, psychosocial services, and addiction treatment can reduce complications associated with perinatal substance abuse. Research investigating the effectiveness of residential and outpatient treatment for pregnant cocaine-dependent women also suggests that many biopsychosocial characteristics and issues influence treatment outcomes. Homelessness and psychiatric illness require a more intensive level of care, and abstinence is difficult to maintain for many women in outpatient treatment as they continue to live in drug-using environments. To optimize the benefit of comprehensive services, services should be provided within a multilevel model of substance abuse treatment including long-

and short-term residential, intensive outpatient, and outpatient settings.

Koren G, Nulman I, Rovet J, Greenbaum R, Loebstein M, Einarson T. **Long-term neurodevelopmental risks in children exposed in utero to cocaine. The Toronto Adoption Study.** Ann N Y Acad Sci, 846:306-13, June 21, 1998.

Children exposed in utero to cocaine are at risk for long-term neurobehavioral damage not just because of the drug itself; but also because of clustering of other health determinants, including low socioeconomic status, low maternal education, and maternal addiction, to mention a few. One methodologic approach to separate the direct neurotoxic effects of cocaine from these synergistic insults is to follow up a cohort of children exposed in utero to cocaine and given up for adoption to middle-upper class families. The Toronto Adoption Study, supported by Health Canada, has proven the direct neurotoxic effects of cocaine on IQ and language. These effects are mild to moderate as compared to those measured in children exposed in utero to cocaine and reared by their natural mothers.

Lester BM, LaGasse LL, Bigsby R. **Prenatal cocaine exposure and child development: What do we know and what do we do?** Semin Speech Lang, 19(2):123-46, 1998.

The literature remains unclear about the effects of prenatal cocaine exposure on child development. Meanwhile, the implications for public policy and treatment and for our scientific understanding of the toxicity of cocaine are substantial. In this article we describe; (1) our current understanding of the effects of prenatal cocaine use and child outcome, (2) the issues that need to be investigated, and (3) implications for treatment of cocaine exposed children. Findings from our database of the published literature shows that our knowledge is still limited, scattered, and compromised by methodological problems that mitigate any conclusions about whether or not or how prenatal cocaine exposure affects child outcome. The cocaine problem is more complicated than first envisioned--it is a multifactorial problem including the use of other drugs, parenting, and environmental lifestyle issues. However, we also show that, even though the effects may be more subtle than initially anticipated, prenatal cocaine exposure will substantially increase in the number of school age children who will need special education services. Clinicians working with these children and families need to be prepared to address psychosocial and environmental issues, as well as developmental performance, in order to optimize their assessment and intervention.

Martin SL, Kilgallen B, Dee DL, Dawson S, Campbell J. **Women in a prenatal care/substance abuse treatment program: Links between domestic violence and mental health.** Matern Child Health J, 2(2):85-94, June 1998.

OBJECTIVES: This study examines the prevalence of violence experienced by patients enrolled in the Step by Step program, a combined prenatal care/substance abuse treatment program at the Wake County Health Department in North Carolina. In addition, potential associations between violence and sociodemographic characteristics, substance use, and mental health are investigated. METHOD: All prenatal care/substance abuse treatment patients who met study eligibility criteria (n= 84) were assessed by health care providers. Descriptive statistics and bivariate analyses were used to compare victims of violence and nonvictims on a wide range of variables. Multiple linear regression analysis estimated the impact of the women's experiences of violence on their levels of mental health symptoms while controlling for confounding factors. RESULTS: Forty-two percent of patients had been victims of both sexual and physical violence, and 30% had been victims of physical violence alone. The combination of sexual and physical violence was significantly less common among African-American women compared with other women. No other significant differences were found between victims and nonvictims in terms of sociodemographics or substance use. Compared with

nonvictims, victims of the combination of sexual and physical violence had significantly elevated levels of general psychological distress as well as elevated levels of hostility, depression, anxiety, interpersonal sensitivity, and somatization. However, no significant differences in levels of mental health symptoms were observed among women who had experienced physical violence in the absence of sexual violence. CONCLUSIONS: Questions concerning experiences of violence, including sexual victimization, should be incorporated into the clinical history-taking procedures of professionals working within prenatal care/substance abuse treatment programs so that effective interventions that take experiences of violence into account can be put into place for these high-risk women.

Richardson GA. **Prenatal cocaine exposure. A longitudinal study of development**. Ann N Y Acad Sci, 846:144-52, June 21, 1998.

The current study examines the effect of prenatal cocaine use on physical, cognitive, and behavioral development at birth, 1, 3, and 7 years, controlling for other factors that affect child development. Women who used cocaine during pregnancy were more likely to be single and to use alcohol, marijuana, and tobacco than were women who did not use cocaine. Prenatal cocaine use was associated with reduced gestational age, but not with birth weight, length, or head circumference. Neonatal neurobehavioral assessments were affected by prenatal cocaine exposure. Growth at 1 year was not affected by prenatal cocaine use. At 3 years, prenatal cocaine use was a significant predictor of head circumference and of the composite score on the Stanford-Binet Intelligence Scale (4th edition). Prenatal cocaine use was also associated with temperamental differences at 1 and 3 years and with behavior problems at 3 years. These findings represent a pattern of central nervous system effects, related to prenatal cocaine exposure, which is predicted by the teratologic model.

Sanderson M, Gonzalez JF. **1988 National Maternal and Infant Health Survey: Methods and response characteristics.** Vital Health Stat 2, 125:1-39, May 1998.

OBJECTIVES: The 1988 National Maternal and Infant Health Survey (NMIHS) was conducted by the National Center for Health Statistics to study factors related to poor pregnancy outcome, such as adequacy of prenatal care; inadequate and excessive weight gain during pregnancy; maternal smoking, drinking, and drug use; and pregnancy and delivery complications. METHODS: The NMIHS is a nationally representative sample of 11,000 women who had live births, 4,000 who had late fetal deaths, and 6,000 who had infant deaths in 1988. Questionnaires were mailed to mothers based on information from certificates of live birth, reports of fetal death, and certificates of infant death. Information supplied by the mother, prenatal care providers, and hospitals of delivery was linked with the vital records to expand knowledge of maternal and infant health in the United States. RESULTS: The response rates in all three components of the NMIHS differed according to the mothers' characteristics. Mothers were more likely to respond if they were 20-39 years of age, were white, were married, had fewer than four children, entered prenatal care early, had more prenatal visits, had more years of education, or resided in the Midwest Region. The percent of respondents was lower for teenage mothers, mothers of races other than white, and mothers with four or more children, little prenatal care, or fewer years of education. Mothers whose infants weighed less than 2,500 grams were less likely to respond in the live-birth and infant-death components than mothers whose infants weighed 2,500 grams or more. CONCLUSIONS: The NMIHS will provide an invaluable tool for researchers and practitioners seeking solutions to perinatal and obstetric problems.

1997

Brown JV, Bakeman R, Coles CD, Sexson WR, Demi AS. **Maternal drug use during pregnancy: Are preterm and full-term infants affected differently?** Dev Psychol, 34(3):540-54, May 1998.

This study examined whether preterm infants are more vulnerable to the effects of prenatal drug exposure than are full-term infants. The sample of 235 low-income African American mothers and their infants included 119 cocaine-polydrug users, 19 alcohol-only users, and 97 nonusers; 148 infants were full term and 87 were preterm. Direct effects of exposure on birth weight, birth length, ponderal index, and irritability were moderated by length of gestation: Fetal growth deficits were more extreme in later-born infants, whereas increases in irritability were more extreme in earlier born infants. Effects of exposure on cardiorespiratory reactivity to a neonatal exam were not moderated by length of gestation. In general, effects of exposure occurred for both cocaine-polydrug and alcohol only users and so could not be unambiguously attributed to either of these drugs alone.

Chavkin W, Breitbart V. **Substance abuse and maternity: The United States as a case study.** Addiction, 92(9):1201-5, Sept 1997.

Two themes pervade the issue of women and addiction in the United States: anger and blame directed at women who use alcohol and other drugs; and neglect and a consequent lack of appropriate treatment. Often the focus is on the addicted pregnant woman and the debate posits a woman's right to autonomy and privacy in opposition to the future child's right to be born free from harm. Others emphasize the tension between blaming individuals and holding the state accountable for provision of services. These conflicts have impeded the diagnosis of women with substance abuse problems, the availability of services and women's access to appropriate care.

Grella CE. **Services for perinatal women with substance abuse and mental health disorders: The unmet need.** J Psychoac Drugs, 29(1):67-78, Jan 1997.

Dual diagnosis refers to the co-occurrence of substance abuse and mental illness, which may take many forms. Women who abuse alcohol or drugs are more likely than men to be diagnosed with a psychiatric disorder, particularly depression or personality disorder. The interaction of pregnancy, addiction, and mental illness creates complex needs that often go unrecognized by treatment providers. Clinical issues concern adequate prenatal care, use of medications while pregnant and/or nursing, maternal bonding, and coordinated treatment planning among medical, addiction, and mental health treatment providers. Barriers to service delivery to perinatal substance-abusing women with a mental illness include the difficulty in diagnosing a dual disorder, child care and custody concerns, lack of health insurance or funds to pay for treatment, and the stigma associated with mental illness and addiction. Services currently available for the dually diagnosed are typically fragmented and uncoordinated and provision of those services is often hampered by philosophical differences, categorical funding, competition for scarce resources, inadequate staff training, and lack of a central administrative authority or mandate. Several models have been suggested that coordinate services for the dually diagnosed. Awareness of the service needs of dually-diagnosed perinatal women must be included within these models and integrated at all levels of the treatment system.

Hurt H, Malmud E, Betancourt L, Brodsky NL, Giannetta J. **A prospective evaluation of early language development in children with in utero cocaine exposure and in control subjects**. J Pediatr, 130(2):310-2, Feb 1997.

A cohort of children of low socioeconomic status, 76 with in utero cocaine exposure and 81 control subjects, was assessed for early language development at 2 1/2 years of age by a masked examiner using the Preschool

Language Scale. There were no differences between groups in expressive, receptive, or total language score. Physicians caring for cocaine-exposed children with early language delay should not automatically ascribe the delay to cocaine exposure but should initiate a standard evaluation for language delay.

King JC. **Substance abuse in pregnancy. A bigger problem than you think**. Postgrad Med, 102(3):135-7, Sept 1997.

Many people think of crack and heroin addiction when they hear the words "substance abuse," but legal substances, such as alcohol, tobacco, amphetamines, and benzodiazepines, can also be abused. When a pregnant women is the abuser, she is potentially damaging two persons. And, since abusers rarely abuse just one substance, the growing fetus may bear the negative impact of multiple substances. Dr King maintains that many pregnant women would try to reduce their substance use if they understood the potential outcome of their actions. He calls for physicians to identify and counsel women who need help confronting their problem.

Kline J, Ng SK, Schittini M, Levin B, Susser M. **Cocaine use during pregnancy: Sensitive detection by hair assay**. Am J Public Health, 87(3):352-8, March 1997.

OBJECTIVES: This paper compares the sensitivity of two tests of cocaine use, interview and urine test, with that of a radioimmunoassay of hair. METHODS: Interviews and hair samples were provided by 397 obstetric patients in one New York City hospital; urine samples were obtained in 377. Of these patients, 241 were receiving prenatal care (were registered) and 156 delivered without prenatal care (were unregistered). The 241 registered patients were derived from 400, comprising all reporting use of cocaine ever ("ever-users"), all reporting use by the father but not themselves ("lifestylers"), and a sample of women who were neither ever-users nor lifestylers. The 156 unregistered patients were derived from 352 women interviewed at delivery, unselected for reported use. RESULTS: Thirty-two percent reported ever using cocaine, 45% of these within 6 months before interview. Urine tests were positive in 20%, hair tests in 59%. The estimated sensitivity of the hair test (92%) was 3.1 times higher than that of the urine test and 4 times higher than that of reported use in the past 6 months. CONCLUSIONS: Self-report and urine tests alone miss most of cocaine users during pregnancy. Hair tests greatly improve detection and thus can enhance evaluations of the effects of prenatal cocaine use on fetal and child development.

LaVesser PD, Smith E M, Bradford S. **Characteristics of homeless women with dependent children: A controlled study.** In Smith EM, Ferrari JR (eds.), *Diversity Within the Homeless Population: Implications for Intervention.* Binghamton, NY: The Haworth Press, 1997.

This chapter discusses a study that suggests that specific characteristics can aid in determining who among the poor become homeless. The authors identify specific demographic, childhood and family, marital, and mental health or substance abuse factors that distinguished a group of 300 homeless women in the St. Louis area from a randomly-selected sample of low-income housed women in St. Louis. The study found that having more children at an earlier age, dropping out of high school, scoring poorly on a standardized test of cognitive skills, having a diagnosis of PTSD, and using crack/cocaine are strongly associated with the risk of experiencing homelessness. The authors discuss how the results of this study compare with those of similar ones, and their implications for policy related intervention and potential prevention of family homelessness.

Lindsay MK, Carmichael S, Peterson H, Risby J, Williams H, Klein L. **Correlation between self-reported cocaine use and urine toxicology in an inner-city prenatal population.** J Natl Med Assoc, 89(1):57-60, 1997.

To determine the prevalence of recent cocaine use and the accuracy of self-reported use, the results of a urine assay for the major cocaine metabolite benzoylecgonine were compared with self-reported cocaine use in an inner-city prenatal population offered routine voluntary urine toxicology screening at the time of registration for prenatal care. During a 1-year period, 6866 women registered for prenatal care and 5200 consented to urine assays for cocaine metabolites. Of the women consenting to urine assays, 253 had positive assays for benzoylecgonine. Women with positive assays were significantly more likely than those with negative assays to be older, black, single, and unemployed. In addition, women with positive assays were significantly more likely to be multiparous, report > two sexual partners in the previous year, and acknowledge a history of a sexually transmitted disease (STD). Forty-seven percent of women with positive assays acknowledged cocaine use in the 6 months prior to sampling. Women with positive assays who denied cocaine use were significantly more likely than those who admitted use to be younger, to report > or = two sexual partners in the past year, and acknowledge a history of an STD. This analysis revealed a poor correlation between self-reported cocaine use and the results of urine assays for cocaine metabolites among women seeking prenatal care in an inner-city institution.

Miller H. **Prenatal cocaine exposure and mother-infant interaction: Implications for occupational therapy intervention**. Am J Occup Ther, 51(2):119-31, Feb 1997.

The literature from multiple disciplines on in-utero cocaine exposure and mother-infant interaction and attachment was examined for possible relationships and implications for occupational therapists. Maternal cocaine use and neurobehavioral deficits in neonates prenatally exposed to cocaine may result in interactional difficulties between mother and infant. Knowledge of child development, sensory regulation, and infant cues will enable therapists to assist the mother in creating positive interactive experiences between herself and her child.

Ostrea EM Jr, Ostrea AR, Simpson PM. **Mortality within the first 2 years in infants exposed to cocaine, opiate, or cannabinoid during gestation.** Pediatrics, 100(1):79-83, July 1997.

This study determines the mortality rate, during the first 2 years of life, in infants who were exposed to cocaine, opiate, or cannabinoid during gestation. For a period of 11 months, a large group of infants were enrolled and screened at birth for exposure to cocaine, opiate, or cannabinoid by meconium analysis. Death outcome, within the first 2 years after birth, was determined in this group of infants using the death registry of the Michigan Department of Public Health. A total of 2964 infants was studied. At birth, 44% of the infants tested positive for drugs: 5% positive for cocaine, 20.2% for opiate, and 11.4% for cannabinoids. Compared to the drug negative group, a significantly higher percentage of the drug positive infants had lower weight and smaller head circumference and length at birth and a higher percent of their mothers were single, multigravid, multiparous, and had little to no prenatal care. Within the first 2 years of life, 44 infants died: 26 were drug negative and 18 were drug positive. The mortality rate among cocaine, opiate, or cannabinoid positive infants was 17.7, 18.4, and 8.9 per 1000 live births, respectively. Among infants with birth weight </=2500 g, infants who were positive for both cocaine and morphine had a higher mortality rate than drug negative infants. Eleven infants died from the sudden infant death syndrome (SIDS); 58% were positive for drugs, predominantly cocaine. The odds ratio for SIDS among drug positive infants was 1.5 and 1.9 among cocaine positive infants. We conclude that prenatal drug exposure in infants is not associated with an overall increase in their mortality rate or incidence of SIDS during the first 2 years of life. However, a significantly higher mortality rate was observed among low birth weight infants who were positive for both cocaine and opiate.

Whiteford LM, Vitucci J. **Pregnancy and addiction: Translating research into practice**. Soc Sci Med,

44(9):1371-80, May 1997.

In some areas of the United States pregnant women are incarcerated if they are addicted to illegal substances, particularly crack cocaine. However, incarceration does not happen to all pregnant addicts, but instead reflects racial/ethnic and socioeconomic categories of prejudice. In the following article, the authors suggest that analysis of this pattern of incarceration is clarified by the use of critical medical anthropology perspective with its explicit historical, political and economic foci. In addition, the authors introduce a program for addicted women that, incorporates into practice the findings of the initial research and demonstrates how research can be translated into practice.

1996

Jacobson SW, Jacobson JL, Sokol RJ, Martier SS, Chiodo LM. **New evidence for neurobehavioral effects of in utero cocaine exposure.** J Pediatr, 129(4):581-90, Oct 1996.

In a large, well-controlled study we detected cognitive deficits in relation to heavy cocaine exposure. These findings demonstrate that prenatal exposure to cocaine at sufficiently high doses early in pregnancy has the potential to produce cognitive changes in infants and that more focused, narrow-band tests may be necessary to detect these subtle neurobehavioral effects. A total of 464 inner-city, black infants whose mothers were recruited prenatally on the basis of pregnancy alcohol and cocaine use were tested at 6.5, 12, and 13 months of age. Standard analyses, based on presence or absence of cocaine use during pregnancy, confirmed effects on gestational age but failed to detect cognitive effects. A new approach to identifying heavy users found that heavy exposure early in pregnancy was related to faster responsiveness on an infant visual expectancy test but to poorer recognition memory and information processing, deficits consistent with prior human and animal findings. These persistent neurobehavioral effects of heavy prenatal cocaine exposure appear to be direct effects of exposure and independent of effects on gestational age.

Jansson LM, Svikis D, Lee J, Paluzzi P, Rutigliano P, Hackerman F. **Pregnancy and addiction. A comprehensive care model.** J Subst Abuse Treat, 13(4):321-9, July 1996.

The problem of substance abuse in pregnancy is a major public health dilemma. Effective comprehensive care of drug addicted women has been shown to improve maternal and neonatal outcomes. The Center for Addiction and Pregnancy (CAP) combines the disciplines of pediatrics, substance abuse treatment, obstetrics/gynecology, and family planning in an effort to reduce the barriers to care often presenting in this subpopulation. For the first 100 CAP births, 82% were delivered vaginally, with a mean gestational age of 38 weeks. The Neonatal Intensive Care Unit admission rate was 10%, and the Bayley Scales of Infant Development performed at 6 and 12 months revealed mean developmental indices within the normal range. In a comparison study, a group of CAP participants had nearly $5,000 savings in costs when compared to a matched cohort. The CAP model of care appears to be an effective mode of treatment for substance abusing pregnant women.

Laken MP, Ager JW. **Effects of case management on retention in prenatal substance abuse treatment**. Am J Drug Alcohol Abuse, 22:439-48, Aug 1996.

Participation in substance abuse treatment during pregnancy is associated with improved pregnancy outcomes. Case management has been proposed as one way to reduce barriers to receiving and continuing treatment. An evaluation was conducted on a case management program to retain pregnant women in drug treatment. Two hundred twenty-five pregnant women received case management services consisting of home visits, telephone counseling, transportation, and referral. All women contacted a substance abuse treatment

center and most (56%) obtained treatment during pregnancy. Sociodemographic factors, personal and family history of substance use and drug treatment, protective services involvement, history of physical and sexual abuse, and need for tangible resources were assessed. Charts were reviewed at the substance abuse treatment center for number of visits and urine toxicology reports, and at the hospital for pregnancy outcome. Data were analyzed by LISREL path analysis. Five factors had significant path correlations to prenatal attendance at the substance abuse treatment center: history of protective services involvement, number of drugs ever used, currently receiving methadone, intensity of case management, and receiving transportation to drug treatment appointments. We conclude that case management, including providing transportation, contributes significantly to retention in substance abuse treatment during pregnancy.

Mok JY, Ross A, Raab G, Hamilton B, Gilkison S, Johnstone FD. **Maternal HIV and drug use: Effect on health and social morbidity.** Arch Dis Child, 74(3):210-4, March 1996.

A retrospective analysis of routine child health surveillance information was performed on health visitor records of 459 children, to examine the independent effects of maternal HIV infection and drug use during pregnancy on morbidity in the first 3 years of life. No significant differences were observed in the developmental progress of children born to HIV infected or drug using women when compared to community controls. The pattern of medical consultations in the first 18 months of life was significantly different, maternal drug use exerting a negative influence on outpatient visits (odds ratio 0.6, 95% confidence interval 0.4 to 1.0). At 6 weeks, the majority of children lived with their birth parent(s), and no differences were observed between the groups. By 10 months of age, only 81% of children born to HIV infected drug using women lived with their parent(s). While maternal drug use and HIV did not have adverse effects on child health and development, these findings highlight the social implications for children affected by the heterosexual spread of HIV.

Napiorkowski B, Lester BM, Freier MC, Brunner S, Dietz L, Nadra A, Oh W. **Effects of in utero substance exposure on infant neurobehavior.** Pediatrics, 98(1):71-5, July 1996.

OBJECTIVE. This study had two objectives: (1) to assess infant behavior by using the NICU Network Neurobehavioral Scale (NNNS), an assessment designed specifically for prenatally drug-exposed infants; and (2) to control for the effects of polydrug use involving alcohol, marijuana, and cigarettes on the neurobehavioral status of the newborn infant. METHODS. The subjects and controls in this study were full-term infants of appropriate gestational age with no medical problems. At 1 to 2 days of age, 20 infants exposed to cocaine, alcohol, marijuana, and cigarettes; 17 infants exposed to alcohol and/or marijuana and cigarettes; and 20 drug-free infants were evaluated by using the Neonatal Intensive Care Unit Network Neurobehavioral Scale. The data were reduced to reflect clinically defined categories of neurobehavioral function and were analyzed by using analysis of variance and chi 2 statistics. RESULTS. Cocaine-exposed infants showed increased tone and motor activity, more jerky movements, startles, tremors, back arching, and signs of central nervous system and visual stress than unexposed infants. They also showed poorer visual and auditory following. There were no differences in how the examination was administered to cocaine-exposed and nonexposed infants. Reduced birth weight and length were also observed in cocaine-exposed infants. CONCLUSION. Differences attributable to cocaine-exposed infants were related to muscle tone and motor performance, following during orientation, and signs of stress. However, cocaine-exposed infants were not more difficult to test, nor did they require an alteration in the examination. Both neurobehavioral patterns of excitability and lethargy were observed. Findings may have been due to the synergistic effects of cocaine with alcohol and marijuana.

National Center on Addiction and Substance Abuse at Columbia University. **Substance abuse and the American woman.** National Center on Addiction and Substance Abuse, 1996.

A comprehensive assessment of the impact on women of all substance abuse, including illegal drugs, alcohol, tobacco, and prescription drugs. The conclusions of this report indicate that the origins, patterns, and consequences of substance abuse are different- and more devastating- for women than for men. Topics include: gender differences, the health of children, and tailoring prevention and treatment.

Perloff JN, Buckner JC. **Fathers of children on welfare: Their impact on child well-being.** Amer J Orthopsych, 66(4):557- 71, 1996.

Although it is generally assumed that fathers are absent from the lives of children being raised on AFDC, evidence from a case-control study in Worcester, Mass., suggests that there is considerable father-child contact. In addition, multivariate modeling indicates that contact with fathers had a modest beneficial effect on children's behavior. Based on these study findings, negative traits of fathers (substance abuse, physical violence) appear to be associated with increased child behavior problems. Discussion includes: data analysis; characteristics of mothers, fathers, and children; fathers' impact on children; and implications for policy. The authors contend that an important first step is to acknowledge the presence of fathers as potential assets to the lives of their children.

Rizk B, Atterbury JL, Groome LJ. **Reproductive risks of cocaine.** Hum Reprod Update, 2(1):43-55, Jan 1996.

Cocaine use during pregnancy in the USA has increased dramatically in the past decade, and has resulted in an associated increase in a variety of maternal and perinatal complications. However, a number of confounding factors make it difficult to determine the direct impact of perinatal cocaine use on maternal and fetal outcome. Many substance-abusing women use multiple drugs while pregnant, receive inadequate prenatal care and are predisposed to other health problems that impact on perinatal outcome. As a result of the rapid clearance of cocaine and limitations of available screening methods, the identification of individual users can be difficult. Furthermore, the determination of accurate prevalence rates of cocaine use during pregnancy has been frustrated by sampling bias. Cocaine has profound systemic and cardiovascular effects in both the mother and the fetus, and as a result a number of complications (i.e. fetal malformations, preterm labor, placental abruption) have been attributed to perinatal cocaine exposure. In addition, maternal cocaine use has been associated with a number of neonatal abnormalities, including cardiopulmonary effects, somatic changes and neurobehavioral sequelae. It is estimated that US $500 million dollars in additional health expenditure resulted from increased neonatal hospital costs and longer lengths of stay for cocaine-exposed neonates. This article reviews the reproductive risks associated with prenatal cocaine use. The pharmacology and physiology of cocaine in relation to pregnancy is discussed, and the impact of this substance on the growth and development of the fetus and infant is reviewed.

Seagull FN, Mowery JL, Simpson PM, Robinson TR, Martier SS, Sokol RJ, McCarver-May DG. **Maternal assessment of infant development: Associations with alcohol and drug use in pregnancy.** Clin Pediatr (Phila), 35(12):621-8, Dec 1996.

Surveillance by parental concern has been advocated to assess whether formal child developmental testing is needed. To determine whether alcohol intake or illicit drug use in pregnancy is associated with differences in maternal perception of infant development, mothers with acknowledge alcohol and drug habits during

pregnancy were interviewed at 11 months' postpartum, within 1 month before infant testing by use of the Bayley Scales of Infant Development. Women with heavy alcohol intake during pregnancy were 15-fold more likely to overestimate their infant's mental development, whereas mothers using illicit drugs were 4-fold more likely to overestimate their infant's physical development. Given the frequent denial of substance abuse, we suggest that health care providers be cautious in accepting a lack of parental concern about a child's development and rely more heavily on formal testing, particularly in high-risk populations.

Waller CS, Zollinger TW, Saywell RW Jr, Kubisty KD. **The Indiana prenatal substance use prevention program: Its impact on smoking cessation among high-risk pregnant women**. Indiana Med, 89:184-7, March-April 1996.

The Indiana Prenatal Substance Use Prevention Program (PSUPP) was established in 1988 to help pregnant women quit cigarette smoking as well as alcohol and drugs. PSUPP directors implement the Screen, Intervene and Follow-up (SIF) model to assess substance use and provide services to help clients stop smoking. During 1995, almost 25,000 individuals were impacted directly or indirectly by the PSUPP. Of these, 1,334 pregnant women were screened for substance use by PSUPP. Of the 987 women identified with a known substance use risk factor, 42.4% (418) were high-risk smokers (> five cigarettes/day) and 9.9% (98) were medium-risk smokers (1-4 cigarettes/day). PSUPP directors counseled their high/medium risk smokers an average of four times during their pregnancy. The PSUPP appears to be effective in getting high-risk smokers to change their smoking behavior during their pregnancy. Approximately one-half (49.9%) of the 516 high- or medium-risk smokers decreased or quit smoking while participating in the PSUPP. When surveyed, about 80% of the PSUPP participants stated that the knowledge they gained through PSUPP relative to tobacco use was "very helpful." Only two-thirds of the PSUPP clients responded that they "strongly agreed" with the statement that tobacco use causes babies to have a lower birth weight. While pregnancy may provide the "teachable moment" for women who smoke, more attention needs to be placed on making women more aware of the risks involved with smoking during pregnancy.

Wenzel SL, Koegel P, Gelberg L. **Access to substance abuse treatment for homeless women of reproductive age.** J Psychoac Drugs, 28(1):17-30, 1996.

Homeless women in the US comprise a subpopulation at high risk for substance abuse -- with rates of substance use disorder ranging from 16% to 67%. Relatively few substance-abusing homeless women avail themselves of formal treatment. The fact that they tend not to utilize formal treatment services is especially problematic among homeless women of reproductive age, who are not only themselves at risk of health-related problems but who place their fetuses and children in danger of multiple negative consequences. The imbalance between treatment need and treatment access suggests that homeless, substance-abusing women are facing severe barriers to care. Although identifying barriers to treatment access is crucial, very little empirical research has been done in this area. This article presents an overview of current knowledge about barriers to substance abuse treatment for women generally and for homeless women specifically, and proposes a comprehensive empirical strategy for redressing the lack of information on homeless women's access to substance abuse treatment.

Zima BT, Wells KB, Benjamin B, Duan N. **Mental health problems among homeless mothers.** Arch Gen Psych, 53(4):332-8, 1996.

This describes a study examining the prevalence of psychological distress and probable lifetime mental disorders among homeless mothers, their use of services, and the relationship between maternal and child

mental health problems. Results show the majority (72%) of sheltered homeless mothers reported high current psychological distress or symptoms of a probable lifetime major mental illness or substance abuse. Few mothers (15%) in need of services received mental health care, and the main point of contact for those was the general sector. Mothers with a probable mental disorder were significantly more likely to have children with either depression or behavior problems. Homeless mothers have a high level of unmet needs for mental health services, and the relationship between maternal and child problems underscores the need for homeless family interventions that promote access to psychiatric care for both generations.

1995

Beal AC, Redlener I. **Enhancing perinatal outcome in homeless women: The challenge of providing comprehensive health care.** Semin Perinatol, 19(4):307-13, Aug 1995.

Homeless women who are pregnant present a number of challenges to health care providers. As a group, they are at risk for a variety of illnesses that could affect their pregnancies, including sexually transmitted diseases and substance abuse. Poor access to health care, inadequate prenatal care, poor nutrition, and poor housing cause these women to suffer poor birth outcomes. They are more likely to deliver low birth weight infants and have higher rates of infant mortality. It should be understood that homeless pregnant women are a heterogenous group. Generally, they are pregnant adolescents and women in homeless families. Additionally, there are differences within these two groups. The causes of homelessness for these women vary as do their needs during pregnancy. Any provider of health care to the homeless must understand the different situations of these women to deliver directed, effective care.

Chazotte C, Youchah J, Freda MC. **Cocaine using during pregnancy and low birth weight: The impact of prenatal care and drug treatment.** Semin Perinatol, 19(4):293-300, Aug 1995.

Cocaine use in pregnancy has been associated with low birth weight. Large population-based studies suggest that 5 to 7% of pregnant women have used cocaine, with much higher rates in low income inner-city women. Among 140 births at our institution of cocaine-using women, we found a lower rate of low birth weight in those who received prenatal care compared with those without prenatal care: 33 of 96 versus 23 of 44. A review of the literature shows that comprehensive care, which includes both prenatal care and drug treatment, seems to be associated with better birth weight outcomes, particularly in women who stop their use in the first trimester. Prenatal care alone, however, is also associated with improved outcomes even if not specialized or linked to drug treatment.

Goldberg ME. **Substance-abusing women: False stereotypes and real needs.** Scl Wk, 40(6):789-98, 1995.

Substance-abusing women are a diverse group, but some of them are among the most disadvantaged individuals in the United States. This article reviews and interprets some recent literature on substance abuse problems and treatment among women. Contrary to popular stereotypes, alcohol and drug abuse among women occurs at similar rates among poor and nonpoor people and among white people and people of color. Major risk factors include childhood sexual or physical abuse, adult victimization by domestic violence, and a

spouse or partner who abuses substances. Standard treatment programs are based on male processes of recovery, and there are enormous problems of access to treatment for women with minor children. Although most studies have found that white women and women of color use substances during pregnancy at similar rates, women of color are disproportionately tested for drug use and receive more child protective services interventions. The findings discussed in this article indicate that prevention of substance abuse-related problems among women requires more than just education.

Hurt H, Brodsky NL, Betancourt L, Braitman LE, Malmud E, Giannetta J. **Cocaine-exposed children: Follow-up through 30 months.** J Dev Behav Pediatr, 16(1):29-35, Feb 1995.

This prospective, blinded study evaluates the effect of in utero cocaine exposure on outcome of nonasphyxiated, term and near-term children born to women of low socioeconomic status. Two hundred nineteen children (101 cocaine-exposed and 118 control) with extensive natal evaluations are evaluated at 6-month intervals. We report here growth, performance on the Bayley Scales of Infant Development (BSID) through 30 months of age, and tone and reflexes at 6 and 12 months. To date, subjects have had 816 follow-up visits, with subject retention greater than or equal to 73%. Cocaine-exposed children showed statistically lower mean weights and smaller mean head circumferences than control children over the 30-month follow-up period. The percentage of children with abnormal tone and reflexes, however, was similar in the two groups at 6 and 12 months. Mean BSID Mental Development Index (MDI) and Psychomotor Development Index scores did not differ between the two groups, although both groups' scores decreased over time. Of concern, both cocaine-exposed and control groups had lower mean MDI scores than those published for a group of children of higher socioeconomic status. We conclude that, in our cohort of children, low socioeconomic or minority status may have had a substantial influence on BSID scores whereas in utero drug exposure did not.

Laken MP, Hutchins E. **Building and sustaining systems of care for substance-using pregnant women and their infants: Lessons learned.** Arlington, VA: National Center for Education in Maternal and Child Health, 1995.

Since 1989, the Center for Substance Abuse Prevention (CSAP) of the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration have funded 147 community-based demonstration projects targeting substance-using pregnant and postpartum women and their infants (PPWI). This monograph, based on focus group discussions and on comparisons with published literature, highlights the lessons learned from 12 PPWI projects. Three topics are addressed: case management, building systems of care, and sustainability. Lessons learned are described along with the task of coordinating and sustaining services for women who are hard to reach, at risk, and functioning in an area involving criminal justice, mental health, housing, child protective services, maternal/ child health, and substance abuse treatment. AVAILABLE FROM: Nat'l. Maternal and Child Health Clearinghouse, 2070 Chain Bridge Rd., Ste .450, Vienna, VA 22182, (703) 821-8955. (Free)

Steinbock MR. **Homeless female-headed families: Relationships at risk.** In Shirley M.H. Hanson et al. (ed.), *Single Parent Families: Diversity, Myths and Realities*. Haworth Press, 1995.

The first section of this article examines the ways in which national and state family welfare laws affect the parenting capacities of the single mother. Our legal system's response to domestic violence, the precipitating factor for roughly one-half of homeless women seeking shelter, is addressed in the second section. According to the author, once poverty and/or domestic violence catapult the single mother into homelessness, the children are often placed in foster care, especially if the mother has a substance abuse problem. Implications for policy development, research and practice are also discussed (author).

Woods JR Jr. **Clinical management of drug dependency in pregnancy**. NIDA Res Monogr 149:39-57, 1995.

In summary, the pregnant substance abuser challenges formal coordination between community-based programs in obstetrics, pediatrics, drug and alcohol treatment, and mental health. Moreover, since substance abuse often is a manifestation of a dysfunctional lifestyle, medical treatment must be linked to education and ultimately, career planning. Some wish that the problem would just go away. Others may feel that the problem is too enormous or too vague for solutions. Neither of these attitudes is appropriate. Identifying and mobilizing the pregnant substance abuser into health care is truly a window of opportunity. Successful rehabilitation into a drug-free lifestyle for the woman and her baby is the reward for this effort.

Undated

Women, drugs, and the unborn. Santa Monica, CA, Pyramid Films. (videotape/58 min).

Designed for health care professionals, this video examines the issues surrounding prenatal drug and alcohol use, including the startling implications when the user is pregnant. AVAILABLE FROM: Pyramid Films, 2801 Colorado Avenue, Santa Monica, CA 90404. Phone: (213) 8282-7577.